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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,503	11/27/2001	Hoi-Sik Moon	6192.0193.AA	8146
32605 7590 03/19/2008 MACPHERSON KWOK CHEN & HEID LLP 2033 GATEWAY PLACE SUITE 400 SAN JOSE, CA 95110			EXAMINER NGUYEN, HOAN C	
			ART UNIT 2871	PAPER NUMBER
			MAIL DATE 03/19/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/993,503	Applicant(s) MOON, HOI-SIK	
	Examiner HOAN C. NGUYEN	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15, 17-19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15, 17-19 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/17/2007 has been entered.

The resubmitted specification and the amended drawings are proper.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 15, 17, 19 and 21-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Ouchi et al. (US6320691B1).

In regard to claims 15, 19 and 23, Ouchi et al. disclose (Figs. 1-4) a method for manufacturing an assembly including a printed circuit board and a plurality of tape

carrier packages, each having a conductive lead thermo-compression bonded to a corresponding conductive land on the printed circuit board, the method comprising:

- arranging the tape carrier packages 20 along a common axis such that the respective leads thereof are disposed parallel to and spaced apart from each other at respective first intervals of 0.3mm (width of 0.2mm at pitch of 0.5mm, col. 8 lines 35-38);
- forming a plurality of the first conductive lands on the printed circuit board the lands being arranged along a common axis and disposed parallel to and spaced apart from each other at respective second intervals of 0.25mm (width of 0.25mm at pitch of 0.5mm, col. 8 lines 40-43) determined in accordance with the thermal expansion properties of the printed circuit board such that, in a pre-compression bonded state, the respective second intervals between adjacent ones of the lands are smaller than the respective first intervals between adjacent ones of the corresponding tape carrier package leads;
- thermo-compression bonding the respective leads of the tape carrier packages to corresponding ones of the lands on the printed circuit board; and, during the thermo-compression bonding, allowing the printed circuit board to expand such that the .respective lands are substantially aligned with corresponding ones of the leads of the tape carrier packages.

Claim 16:

- measuring the thermal expansion properties of the printed circuit board before forming the leads thereon

wherein

Claim 21:

- the second intervals become substantially the same as the second intervals by thermal expansion when the printed circuit board undergoes a thermo-compression bonding process.

Claim 24:

- the interval between the printed circuit board land groups is inherently determined by:
 - measuring an amount of total thermal expansion of the substrate under a thermo-compression bonding process, and
 - obtaining the interval between the printed circuit board land groups by considering the amount of total thermal expansion.

Claim 25:

- each conductive lead comprises a group of parallel, spaced conductive leads, and each conductive land comprises a corresponding group of parallel, spaced conductive lands.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 15, 18-19 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Conventional Art Admitted by Applicants in view of Ouchi et al. (US6320691B1).

In regard to claims 15, 19 and 23, Conventional Art Admitted by Applicants disclose (Table 1, 4-5, 8-9, 11 Figs. 1-2, 4, 8, 10-11) a method for manufacturing an assembly including a printed circuit board and a plurality of tape carrier packages, each having a conductive lead thermo-compression bonded to a corresponding conductive land on the printed circuit board, the method comprising:

- arranging the tape carrier packages 20 along a common axis such that the respective leads thereof are disposed parallel to and spaced apart from each other at respective first intervals;
- forming a plurality of the first conductive lands on the printed circuit board the lands being arranged along a common axis and disposed parallel to and spaced apart from each other at respective second intervals determined in accordance with the thermal expansion properties of the printed circuit board such that, in a pre-compression bonded state,
- thermo-compression bonding the respective leads of the tape carrier packages to corresponding ones of the lands on the printed circuit board; and, during the thermo-compression bonding, allowing the printed circuit board to expand such that the .respective lands are substantially aligned with corresponding ones of the leads of the tape carrier packages.

wherein

Claims 18 and 22:

- the respective second intervals between adjacent ones of the leads are asymmetric with respect to a line passing through the middle of a width of the painted circuit board when the printed circuit board is asymmetric with respect to said line.

However, Conventional Art Admitted by Applicants fails to disclose the respective second intervals between adjacent ones of the lands to be smaller than the respective first intervals between adjacent ones of the corresponding tape carrier package leads.

Ouchi et al. teach the respective second intervals of 0.25mm (width of 0.25mm at pitch of 0.5mm, col. 8 lines 40-43) between adjacent ones of the lands being smaller than the respective first intervals of 0.3mm (width of 0.2mm at pitch of 0.5mm, col. 8 lines 35-38) between adjacent ones of the corresponding tape carrier package leads.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method for manufacturing an assembly including a printed circuit board and a plurality of tape carrier packages as Conventional Art Admitted by Applicants disclosed with the respective second intervals between adjacent ones of the lands to be smaller than the respective first intervals between adjacent ones of the corresponding tape carrier package leads for good connecting with accuracy (col. 8 lines 48-51) as Ouchi et al. taught.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571)272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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/Andrew Schechter/
Primary Examiner, Art Unit 2871